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CRITERIA FOR THE REGRADING OF SCHOOLS

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Perhaps the most significant forward step in methods of school supervision was made possible when the modern more exact methods of mental measurement were put at the disposal of supervisors. School work has always been conceived of as at root an intellectual problem, the problem of the learning process, even though it be admitted that learning has its connection with emotion or other factors. Methods for the quantitative measurement of intelligence become, therefore, the key to school adjustments. Especially in a graded system do they make possible the formation of the homogeneous groups so essential to progress under such conditions. Yet to reorganize and regrade a school according to mental age alone is to make a serious mistake. Mental age is the essential criterion, it is true; but there are contributing criteria which successful reorganization cannot afford to overlook. A discussion and application of a tentative list of such criteria are here presented.

Probably first in importance after mental age is the formerly used, and now somewhat discredited, chronological age. Before the advent of mental age, studies in retardation led to attempts at readjustment and reorganization based upon chronological age. This movement in American education occupied something of the same place as that held today by the tendency to grade by mental age. It has its values and should not be thoughtlessly and entirely discarded in favor of the new. Some of the reasons for this follow.

To a considerable extent chronological age determines social grouping. Certain characteristics of chronological age may bar a child from the group of his mental age. A child chronologically fourteen, who happens to be mentally seven, does not belong in first grade. He is a social misfit when so placed. He belongs in a specially arranged group in which chronological and mental age tend to correspond. A child chronologically seven and mentally

fourteen does not belong in the eighth grade. To put even the supernormal child too far away from his chronological group is to deprive him of his childhood and to make of him prematurely an adult with little compensating value to himself. The better solution is to put him in a class for supernormals, when there are enough individuals to warrant such a class, or else to keep him with the group which he more nearly fits socially and to organize for him more intensive and extensive work in fields covered by that group.

This conclusion is not to be understood as meaning that a mentally advanced child should not be placed at all beyond his chronological age; but he should not be advanced so far that he gets entirely out of his social group.

In addition to being chronologically and mentally ready for his grade, a child should be physically ready for it. If he is in some way physically handicapped, he may to advantage be retained in a lower grade. He may be naturally backward in physical growth and stamina, or he may have contracted diseases or met with accidents which make it desirable not to push him to the limit of his mental age. On the other hand, a child of fine physique may sometimes with good effect be pushed somewhat beyond his chronological or even his mental age.

Furthermore, a child who is mentally, chronologically, and physically ready for a certain grade may not be pedagogically ready for it. This pedagogical readiness or lack of it may be largely a matter of the child's school history. He may have started to school late, or his schooling may have been very much broken by illness or change of residence. Such a child should very often, when he does get a start, pass through the grades more rapidly than the other children, but should not jump immediately to the grade of his chronological and mental age. Yet a child who has had fine school opportunities and fine home training may work in a grade even somewhat beyond his mental and chronological age, and make a success of it.

Directly connected with all pedagogical and other school success is also a *character* criterion. In spite of the best efforts of skilful teachers the lazy child, the child who will not concentrate and throw himself into his work or who does so only at irregular intervals,

must often have his whole course scaled below what it would be if the other criteria of chronological age, mental age, physique, school history, etc., were considered alone. Or his course may possibly be scaled above what these other criteria would warrant if his character is such as to make it a compensating factor.

In regrading a school, therefore, with the idea of forming homogeneous groups the central criterion of mental age should be supplemented by the contributing criteria of (1) chronological age with special reference to social grouping, (2) physical age with special reference to health, (3) pedagogical age with special reference to school history, and (4) character age with special reference to ability for concentration and work. There may also be other criteria not here listed. This means that a reorganization is a very complicated and difficult thing, if permanent results are to be attained. It cannot be brought about by determination of mental age alone and a mere group shuffling of children according to the central factor of mental age. The problem is not to be solved by the formation of groups based upon the one criterion, but by individual treatment involving additional consideration of all the contributing criteria. This makes it desirable that there be a considerable period for the gathering of data, and a close and sympathetic acquaintance with the individual children themselves. It means that the regrading should be a co-operative effort of all who know the children, rather than the more arbitrary work of a research director or supervisor alone.

The authors of this article have carried out an extended program of standard testing in the Training School of the San Jose State Normal School, and continuous use has been made of this material in dealing with the problems presented by individual children and classes. Recently conditions have made possible the beginning of a group reorganization of the whole school, and the ideas here discussed have been utilized in this reorganization. By means of the application of different types of standard individual and group intelligence tests and many pedagogical tests in the various school subjects, and with the help of efficient teachers who knew most of the children intimately and who supplemented the test scores by ratings, the data necessary to the application of all the criteria

were gathered. It is not the intention to consider here the validity and relative value of the tests used because the tests were mainly those which have been commonly reported in the journals, and discussion of them in this particular paper would tend to divert attention from the main point of the application of the various criteria to the work of reorganization. The validity and efficiency of the data are therefore assumed, consideration being given only to the application of the criteria.

The primary fact discovered by the testing, as indicated by the data presented in Table I, was that all through the school there were practically no children in grades for which they were mentally too young, but that there were considerable numbers of children in grades for which they were mentally too old. In other words, there was a large amount of mental retardation in the sense that children had been held behind the grades for which they were mentally ready. This state of affairs could come about from a course of study keyed too high, from overconscientiousness on the part of teachers with very high standards, from the presence of many unevenly graded children from other schools who had been put into lower grades to "even up" and then left to proceed step by step without special promotion, or from a combination of these causes.

In this connection it should be said, however, that there has always been in this school a willingness to promote at any time of the year without waiting for special periods. There has always been a series of flexible groups within grades, and children have at any time passed freely from group to group. It may be that unconsciously the barrier between the highest group of one grade and the lowest group of the next has been more difficult to cross than have the barriers between the groups of a given grade.

At any rate, whatever were the causes of the condition, there were many children behind the group of their mental age. The first impulse was to move all of these children forward in groups to the grade of their mental age. The wiser, second thought was to apply all of the criteria to each individual child, and then to act accordingly. Following this plan, three very distinct courses of action developed. (1) Certain children were immediately put ahead to a grade that more nearly fitted them according to the

combined criteria; (2) certain children were furnished with special coaching work either in classes or separately, which will enable them more quickly to arrive at the higher grade to which the criteria show that they may aspire; and (3) certain special clinical groups

TABLE I
GRADE LOCATION BY MENTAL AGE-GRADE STANDARD

Training School	Mental Age-Grade Standard												College	Total
	1	2	3	4	5	6	7	8	9	10	11	12		
8.....	.....	.....	.....	.....	.....	.....	2	25	25	19	11	3	1	86
7.....	.....	.....	.....	.....	1	.....	54	16	14	7	.....	.....	.....	92
6.....	.....	.....	.....	.....	1	39	30	6	1	.....	.....	.....	.....	77
5.....	.....	.....	.....	2	29	19	7	1	.....	.....	.....	.....	.....	58
4.....	.....	.....	.....	43	13	10	3	2	.....	.....	.....	.....	.....	71
3.....	.....	.....	24	13	3	2	.....	.....	.....	.....	.....	.....	.....	42
2.....	.....	33	21	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	61
1.....	58	15	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	74
Total....	58	48	46	65	47	70	96	50	40	26	11	3	1	561

MENTAL AGE-GRADE STANDARD

Kindergarten— 4 years 6 months to 5 years 5 months

Grade I— 5 years 6 months to 7 years 5 months

Grade II— 6 years 6 months to 8 years 5 months

Grade III— 7 years 6 months to 9 years 5 months

Grade IV— 8 years 6 months to 10 years 5 months

Grade V— 9 years 6 months to 11 years 5 months

Grade VI—10 years 6 months to 12 years 5 months

Grade VII—11 years 6 months to 13 years 5 months

Grade VIII—12 years 6 months to 14 years 5 months

Grade IX—13 years 6 months to 15 years 5 months

Grade X—14 years 6 months to 16 years 5 months

Grade XI—15 years 6 months to 17 years 5 months

Grade XII—16 years 6 months to 18 years 5 months

College Freshman—17 years 6 months to 19 years 5 months

were organized for supervised experimental project work, which it is hoped may contribute to a better understanding of the nature of these children and to greater success in assisting their progress.

It is probable that the question which will be immediately suggested by the data presented will have to do with the relatively small amount of change made. There would be a fair criticism at this point if the changes made represented the final intended action. This, however, is not the case. *The authors believe that changes made at any one time should not be too many or too radical, but that such reorganization as is here outlined should be repeatedly made at short intervals until a relatively complete adjustment is achieved.* They favor several partial adjustments rather than a single one of greater magnitude, because they believe that such a course results not only in less disorganization, dissatisfaction, and ultimate loss of time, but also in a more healthy moral and mental attitude on the part of the children and a better pedagogical continuity and efficiency. *The report given is therefore to be regarded as the foundation only for such a series of rather rapid changes as will lead to the desired goal.*

No pupils in the seventh and eighth grades were immediately advanced. The grades are organized somewhat departmentally, and promotion by subject has been common. What seemed to be needed was a sort of "evening up" process which would make certain that children capable of advance were given opportunity for special work. This was cared for in the coaching work described later. Table II shows the record of the other grades.

ILLUSTRATIONS OF CHILDREN NOT ADVANCED WITH REASONS FOR THE DECISION

1. A child of seventh-grade chronological age, twelfth-grade mental age, found in low eighth grade. Not advanced because of immaturity. Already a year beyond her chronological age, and in social development is relatively immature. Very bright and promising, but childish. "Just a little girl."

2. A child of eighth-grade chronological age, twelfth-grade mental age, found in low eighth grade. Not advanced because of health and school history. A frail child; worries about her work. Out a great deal on account of illness. Fitted to carry a light load of school work, but not to be pressed very close to the limit of her mental ability.

TABLE II

CHILDREN IN GRADES BELOW THE SEVENTH WHO WERE ADVANCED

CHILD	GRADE	NORMAL GRADE FOR CHRONOLOGICAL AGE	NORMAL GRADE FOR MENTAL AGE	ADVANCED TO
Sixth Grade				
1.....	High VI	VI	VIII	Low VII
2.....	High VI	VI	IX	Low VII
3.....	High VI	VI	VIII	Low VII
4.....	Low VI	VI	VIII	High VI
5.....	Low VI	VI	VIII	High VI
6.....	Low VI	VI	VIII	High VI
7.....	Low VI	VI	VIII	High VI
Fifth Grade				
1.....	High V	V	VII	Low VI
2.....	High V	V	VII	Low VI
3.....	High V	V	VIII	Low VI
4.....	High V	V	VII	Low VI
5.....	High V	V	VII	Low VI
Fourth Grade				
1.....	High IV	V	VI	Low V
2.....	Low IV	IV	VIII	Low V
3.....	High IV	V	VI	Low V
4.....	High IV	V	V	Low V
5.....	High IV	V	VI	Low V
6.....	High IV	V	V	Low V
7.....	High IV	IV	VIII	Low V
8.....	High IV	IV	VII	Low V
9.....	High IV	V	V	Low V
10.....	High IV	V	V	Low V
11.....	High IV	V	V	Low V
12.....	High IV	IV	VI	Low V
13.....	Low IV	IV	VII	High IV
14.....	Low IV	IV	VI	High IV
15.....	Low IV	IV	V	High IV
16.....	Low IV	IV	V	High IV
17.....	Low IV	IV	IV	High IV
Third Grade				
1.....	High III	IV	V	Low IV
2.....	High III	III	IV	Low IV
3.....	High III	III	IV	Low IV
4.....	High III	III	V	Low IV
5.....	High III	III	VI	Low IV
6.....	High III	III	IV	Low IV
7.....	High III	IV	IV	Low IV

TABLE II—Continued

CHILD	GRADE	NORMAL GRADE FOR CHRONOLOGICAL AGE	NORMAL GRADE FOR MENTAL AGE	ADVANCED TO
Second Grade				
1.....	High II	III	IV	Low IV
2.....	High II	II	IV	Low IV
3.....	High II	II	III	Low IV
4.....	High II	II	III	Low IV
5.....	High II	II	IV	Low IV
6.....	High II	III	III	Low IV
7.....	High II	IV	IV	Low IV
8.....	Low II	II	III	High II
First Grade				
1.....	Low I	I	III	High I
2.....	High I	II	II	High II
3.....	High I	II	III	High II

3. A child of seventh-grade chronological age, tenth-grade mental age, found in high seventh grade. Not advanced because of physical, social, and school history criteria. Immature physically and in her outlook upon life. Would be out of her social element in an older chronological-age group. Nervous, easily disturbed. School history broken by illness and absence.

4. A child of ninth-grade chronological age, ninth-grade mental age, found in high seventh grade. Not advanced because of recent entrance to this school. Just becoming adjusted. School history much broken; has moved from school to school, and must give some time to establishing a pedagogical continuity.

5. A child of sixth-grade chronological age, eleventh-grade mental age, found in high sixth grade. Not advanced because of shyness and somewhat irregular attendance. Rather new in the school. Under observation and probably should be rapidly advanced as soon as her case is better understood.

6. A child of seventh-grade chronological age, seventh-grade mental age, found in high sixth grade. Not advanced because he is a case of *can* but *won't*. Seems lazy; is very uninterested and inattentive. Really unable to go ahead until he does some work

where he is, but showing no tendency to do the necessary work. He has been put into a small clinical group which is engaged upon a typical problem-project in which he has developed some interest. Through this clinical work an attempt is being made to understand him better, and to find the type of activity and subject-matter which will arouse and hold his interest.

The children listed in Table III were selected and admitted to special coaching, not upon the criterion of mental age alone, but after consideration of all of the other criteria here discussed. Of course, children whose chronological age and mental age are both above the normal for the grade in which they are found naturally receive very serious consideration; but even in such cases the other criteria occasionally indicate that the individual should after all remain where he is, and not even be admitted to special coaching.

In the problem-project groups were placed a number of backward children in order that their difficulties, interests, special abilities, and tendencies might be more carefully studied. It was intended to make these groups really clinical-experimental. They were put under the direction of the best available experienced teachers who had returned to the normal school for further instruction. Because of lack of helpers it was not found possible to organize more than two such groups, one from the middle grades and one from the upper grades.

The project was in a sense imposed upon these children. They were called into the principal's office and asked if they would be willing to construct a large map of California on the school grounds for the general use of the school. They became interested in the plan at once and entered upon the work enthusiastically. Under the leadership of the teachers in charge they selected the location and determined the details of the plan. Then they decided that they must have a paper pattern made to scale. They were assigned a room where they worked in a free way on the geographical and mathematical problems involved in the production of the pattern. Other school subjects were likewise related to the project as work progressed; but it was all of the time kept in mind by those who were directing the work that the main objective was not the school subjects covered or the material product, but rather the improved

condition of the child and the opportunity to study him under the most favorable conditions. The pattern has been completed, and

TABLE III
CHILDREN GIVEN SPECIAL COACHING

Child	Grade	Normal Grade for Chronological Age	Normal Grade for Mental Age
1.....	High VIII	VIII	VIII
2.....	High VIII	VIII	VIII
3.....	Low VIII	XI	X
4.....	High VIII	VIII	VII
5.....	Low VIII	X	IX
6.....	Low VIII	VIII	IX
7.....	Low VIII	VIII	IX
8.....	Low VIII	IX	XIII
9.....	Low VIII	IX	IX
10.....	Low VIII	VIII	IX
11.....	High VIII	IX	XII
12.....	Low VIII	X	IX
13.....	Low VIII	IX	IX
14.....	High VIII	X	IX
15.....	High VII	VII	X
16.....	High VII	VII	X
17.....	High VII	VIII	X
18.....	High VII	VII	X
19.....	High VII	X	VIII
20.....	High VII	VII	IX
21.....	High VII	VII	X
22.....	High VII	IX	IX
23.....	High VII	VIII	X
24.....	High VII	VII	X
25.....	High VII	VI	IX
26.....	Low V	VI	VI
27.....	Low V	V	VI
28.....	High IV	VI	VI
29.....	High IV	IV	V
30.....	High IV	IV	V
31.....	High IV	IV	VI
32.....	Low IV	IV	IV
33.....	Low IV	IV	VII
34.....	High III	III	IV
35.....	High III	III	III
36.....	Low III	IV	IV
37.....	Low III	III	III
38.....	Low III	IV	III
39.....	High I	I	II

at this writing is substantially realized in the place chosen for it on the grounds. Moreover, new plans are developing every day,

giving new insight into the educational needs of the children involved, and it is impossible at present to place limits upon the values which are being uncovered.

The field of the project for the upper-grade group was arbitrarily chosen, but the particular industry which was to be the major objective was left to the choice of the group. For some time the

TABLE IV
THE PROBLEM-PROJECT GROUPS

CHILD	NORMAL GRADE FOR CHRONOLOGICAL	NORMAL GRADE FOR MENTAL AGE	FROM GRADE
Middle-Grade Group			
1.....	VIII	VII	High VI
2.....	VII	VII	High VI
3.....	VII	V	Low V
4.....	VII	VI	Low V
5.....	VI	V	Low IV
6.....	V	V	High IV
Upper-Grade Group			
1.....	X	VII	Low VII
2.....	VIII	VII	Low VII
3.....	VIII	VII	Low VII
4.....	X	VII	Low VII
5.....	X	VII	Low VII
6.....	IX	VIII	Low VII

children were taken on frequent special visits to the commercial and industrial institutions of the city in an attempt to diagnose their common interest and level of ability. As a result of this preliminary work they focused their attention upon a certain canning factory and made the decision to try to build at school a facsimile of the plant of this company. They have now worked out the ground-floor plan, and are at work doing real experimenting with materials to find those suitable for their purpose. Most of the school subjects are involved, and the miniature buildings will be the material outcome; but, as before, the real objective in the minds of the teachers is the change in the children themselves and the opportunity to study them to better advantage than they could be studied under conventional school conditions.

Projects have been arranged for other groups according to their special needs. Three boys have been selected from the upper grades and sent in the morning to the high-school vocational shops. They return to their own school in the afternoon for vocational English and arithmetic. There is also in the school an increasing application of the project idea with normal children in the regular work of the school, such as the first-grade fruit farm which is now being worked out on their room stage used as a large sand table; the second-grade circus in a smaller sand table; and the third-grade Hiawatha around which much of the total work of the grade is centered at present.

In addition to the progress detailed above regarding the special projects, it may be said that the children who were advanced have in the main been successful and are in many cases leading the classes to which they were sent. Of those being coached, a number have already been promoted. Altogether, it may be said that our experience points to the conclusion that the program as outlined, repeated at intervals as suggested, would result in a maximum of efficient grading with a minimum of undesirable accompaniments.